

Changes in Service Availability, Readiness, Process of Care, and Client Satisfaction of Family Planning Services

A Comparison between the 2015 and 2021 Nepal Health Facility Surveys

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DHS FURTHER ANALYSIS REPORTS NO. 147

September 2023



DHS Further Analysis Reports No. 147

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December 2023

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Ministry of Health and Population

Acknowledgments: The authors wish to thank Dr. Krishna Prasad Paudel, Dr. Bibek Kumar Lal, Kabita Aryal, Dr. Rajendra Gurung, Dr. Rajendra Bhadra, Navaraj Bhattarai, Ravi Kant Mishra, Sabita Tuladhar, Netra Prasad Bhatta, Madan Raj Bhatta, and Arun Storrs for their comments on the report.

Editor: Diane Stoy

Document Production: Joan Wardell

This study was conducted with support from the United States Agency for International Development (USAID) through The DHS Program (#720-OAA-18C-00083). The views expressed are those of the authors and do not necessarily reflect the views of USAID or the United States Government. The DHS Program assists countries worldwide in the collection and use of data to monitor and evaluate population, health, and nutrition programs. For additional information about The DHS Program, contact: DHS Program, ICF, 530 Gaither Road, Suite 500, Rockville, MD 20850, USA; phone: +01 301-572-0950; fax: +01 301-407-6501; email: reports@dhsprogram.com; Internet: www.dhsprogram.com.

Recommended citation:

Pant, Prakash Dev, and Sara Riese. 2023. *Changes in Service Availability, Readiness, Process of Care, and Client Satisfaction with Family Planning Services: A Comparison between the 2015 and 2021 Nepal Health Facility Surveys*. DHS Further Analysis Reports No. 147. Rockville, Maryland, USA: ICF.

CONTENTS

TABLES	v
FIGURES	vii
ACRONYMS	ix
ABSTRACT	xi
KEY INDICATORS	xiii
1 INTRODUCTION	1
1.1 Context	1
1.2 Objectives of the Study	2
2 METHODOLOGY	3
2.1 Data Collected in 2015 and 2021 NHFS	3
2.2 Description of Variables	3
2.3 Data Analysis	7
2.4 Ethical Considerations	7
3 RESULTS	9
3.1 Availability of Family Planning (FP) Services	9
3.2 Infection Prevention and Control	11
3.3 FP Commodity Management	12
3.4 Management Meetings and Quality Assurance Monitoring	13
3.5 Service Readiness	14
3.6 Process of Care	17
3.7 Client Satisfaction	19
4 SUMMARY	21
5 POLICY IMPLICATIONS	23
6 STRENGTHS AND LIMITATIONS	25
7 CONCLUSIONS	27
REFERENCES	29
APPENDIX	31
Appendix Tables A: Composite Index Constructs	37
A1 Structure	37
A2 Process	38
A3 Outcome	39

TABLES

Change in key indicators of family planning services	xiii
Table 1	Survey year and sample size of health facilities and clients..... 3
Table 2	Change in infection prevention and control index by select background characteristics of facilities that offer family planning services, NHFS 2015 and 2021 12
Table 3	Change in family planning commodity management indicators in health facilities that offer family planning services, NHFS 2015 and 2021 13
Table 4	Change in management meetings and quality assurance performed at a facility that offers family planning service, NHFS 2015 and 2021 14
Table 5	Change in the service readiness index by selected background characteristics of health facilities that offer family planning services, NHFS 2015 and 2021..... 17
Table 6	Family planning clients administered with all items covered under six domains related to standards of quality service delivery at the time of service, NHFS 2015 and 2021 19
Table 7	Change in family planning client's complaints on family planning service on the day of service they took, NHFS 2015 and 2021 20
Table 8	Change in mean index of family planning client's concerns/issues and common problems they experienced at the time they visited the facility for service, NHFS 2015 and 2021 20
Appendix Table 1	Change in health facilities that offer any modern methods of family planning services by selected background characteristics, NHFS 2015 and 2021 31
Appendix Table 2	Change in methods of family planning service availability in health facilities that offer services and the frequency of service availability per week, NHFS 2015 and 2021 32
Appendix Table 3	Change in possession of tools for infection prevention and control available at health facilities at the time of survey, NHFS 2015 and 2021 33
Appendix Table 4	Change in the availability of basic equipment and instruments required for family planning service delivery (observed in health facilities that offer family planning services), NHFS 2015 and 2021 33
Appendix Table 5	Change in staff/guidelines, equipment, and commodities used as trace indicators to construct the family planning service delivery readiness index (observed at health facilities on the day of the health facility visit), NHFS 2015 and 2021 34
Appendix Table 6	Change in the providers' compliance with standards of quality service delivery by client exit interview questions, NHFS 2015 and 2021 35
Appendix Table 7	Change in the providers' compliance with standards of quality service delivery by background characteristics of health facility, NHFS 2015 and 2021 36
Appendix Table A1.1	Indicators used to create index of family planning method offered (availability of family planning service) 37

Appendix Table A1.2	Indicators used to create index/sub-index of infection prevention and control....	37
Appendix Table A1.3	Indicators used to create index of service readiness.....	37
Appendix Table A1.4	Indicators used to create mean index of service delivery	38
Appendix Table A2.1	Indicators used to create index/sub-index of providers' adherence to providing quality service	38
Appendix Table A3.1	Indicators used to create the index of common problems	39

FIGURES

Figure 1	Trend of selected reproductive health indicators, NDHS 1996–2022	2
Figure 2	Percentage distribution of type of facility that provides at least one modern family planning service, NHFS 2015 and 2021	9
Figure 3	Percentage of health facilities that offer specific family planning methods, by method and quantity of methods, NHFS 2015 and NHFS 2021.....	10
Figure 4	Percentage distribution of tools for infection prevention and control observed in and around the family planning service delivery areas in facilities that provide at least one modern method of family planning, NHFS 2015 and 2021	11
Figure 5	Percentage distribution of types of family planning facilities by basic equipment and tools for family planning service delivery observed in health facilities at the time of the survey, NHFS 2015 and 2021	15
Figure 6	Distribution of health facilities by indicators of service readiness, NHFS 2015 and 2021	16
Figure 7	Indicators of providers' adherence to standards of quality family planning service during service delivery at a family planning facility, NHFS 2015 and 2021	18

ACRONYMS

BHCC	basic health care center
CHU	community health unit
COC	combined oral contraceptive pill
CPR	contraceptive prevalence rate
DoHS	Department of Health Services
ECP	emergency contraceptive pill
EPI	expanded program of immunization
FCHV	female community health volunteer
FP	family planning
FWD	Family Welfare Division
GoN	Government of Nepal
HF	health facility
HIVTCs	human immunodeficiency virus testing and counseling center
HP	health post
HTC	HIV testing and counseling
IUCD	intrauterine contraceptive device
LARC	long-acting reversible contraceptive
mCRP	modern Contraceptive Prevalence Rate
MoHP	Ministry of Health and Population
NFP	Nepal Family Planning
NHFS	Nepal Health Facility Survey
NHRC	Nepal Health Research Council
OCP	oral contraceptive pill
ORC	outreach clinic
PHC	primary health care
PHCC	primary health care center
PHCORC	primary health care outreach clinic
POP	projection only pill
SARA	Service Availability and Readiness Assessment
SDG	Sustainable Development Goal
STI	sexually transmitted infection

TFR	Total Fertility Rate
UHC	urban health center
WHO	World Health Organization

ABSTRACT

This study examines changes in the provision of family planning services in health facilities of Nepal between 2015 and 2021. Seven broad domains of family planning services are assessed: service availability, infection prevention and control, family planning commodity management, management meetings and quality assurance monitoring, basic equipment and items for family planning service delivery/service readiness, provider's adherence to provision of family planning service standards of quality care, and clients' opinions of the family planning service.

The data for this study come from the 2015 and 2021 Nepal Health Facility cross-sectional surveys. Bivariate cross-tabulation, percentage, and means are used as summary measures to interpret the results.

Data analysis reveals that 98% of health facilities in both surveys offer at least one modern method of family planning. At the same time, the data analysis also reveals that methods such as IUCD, implants, male sterilization, and female sterilization were available only in selected health facilities. Measures of infection prevention and control, management and quality assurance, basic equipment and tools, and overall family planning service delivery all improved from 2015 to 2021.

Quality of family planning service delivery was measured with six domains and improvements were seen in all areas except physical examination and discussion of partners and STIs. In addition, significantly fewer complaints were seen in clients in 2021 compared to 2015. Additional effort in addressing these barriers may ensure improved service delivery in the future and can be key to achieving goals identified in various plans and programs.

Key words: service availability, service readiness, provision of quality services, health facilities, family planning, infection control.

KEY INDICATORS

Change in key indicators of family planning services

Indicators	2015	2021	Difference (percentage points)	p value
Mean index of service availability	33.9	36.8	2.9	NS
Five temporary modern methods	43.7	57.7	14.0	***
Seven modern methods	27.9	36.9	9.0	**
Infection prevention and control				
Mean index of infection prevention and control	41.9	63.4	21.5	***
Mean index of hand hygiene	54.4	96.2	41.8	***
Mean index of personal protective equipment	1.2	23.9	22.7	***
Mean index of injection safety	2.8	18.0	15.2	***
FP commodity management				
Combined oral contraceptive pills stocked out in last 6 months	15.7	23.0	7.3	**
Well-ventilated commodity storage room	83.4	91.6	8.2	**
Ordered FP commodities received within two weeks	71.2	81.2	10.0	**
Management meetings and quality assurance monitoring				
Routine staff meeting once at least in 6 months	37.5	51.2	13.7	**
Routine meetings about facility activities or management issues of both facility staff and community/community committee members once at least in 6 months	35.9	50.2	14.3	**
Service readiness				
Mean index of service delivery items	53.5	60.8	7.3	***
Observed functioning digital BP apparatus	1.5	7.1	5.6	***
Observed functioning manual BP apparatus	86.4	97.2	10.8	***
Observed functioning stethoscope	90.0	97.6	7.6	***
Observed functioning examination light	44.8	90.9	46.1	***
Observed examination bedtable	82.6	90.2	7.6	***
Observed goose lamp	5.8	10.0	4.2	***
Guideline on FP	12.8	20.4	7.6	**
Staff trained in FP	31.3	20.9	-10.4	***
Process of care				
Mean index of providers' adherence to delivering quality FP services	26.8	36.4	9.5	***
Mean index of client history	17.0	27.8	10.8	***
Mean index questions and concerns	21.4	38.2	16.8	***
Mean index privacy and confidentiality	31.7	52.4	20.7	***
Mean index additional provider's actions	54.3	58.6	4.3	*
Client satisfaction				
Mean index of common problems	11.8	6.6	-5.2	***

Note: FP = family planning, BP = blood pressure, NS = non-significant *** p < .001, ** p < .01, * p < .05.

Five temporary modern methods = oral contraceptive pills, injectable (Depo), male condom, implant, and IUCD

Seven modern methods = oral contraceptive pills, injectable (Depo), male condom, implant, IUCD, male and female sterilization

1 INTRODUCTION

The Government of Nepal (GoN) is committed to providing equitable access to voluntary family planning (FP) services based on informed choices made by individuals, couples, and particularly poor, vulnerable, and marginalized people. The primary goal of the FP program is to improve access to FP services through accountable and equitable health service delivery systems and to enable women and couples to attain their desired family size, ensure the healthy spacing of births, reduce the unmet need for contraceptives, increase contraceptive use to avoid unwanted pregnancies, and save the lives of mothers and children. The GoN since 1959 has regularly delivered FP services and has expressed their promises for FP services in the country's development plans and strategies.¹⁻⁷ The government has envisioned that “by the end of 2030, every individual and family will lead a healthy, happy and prosperous life, fully exercising their sexual and reproductive health and rights.”⁸

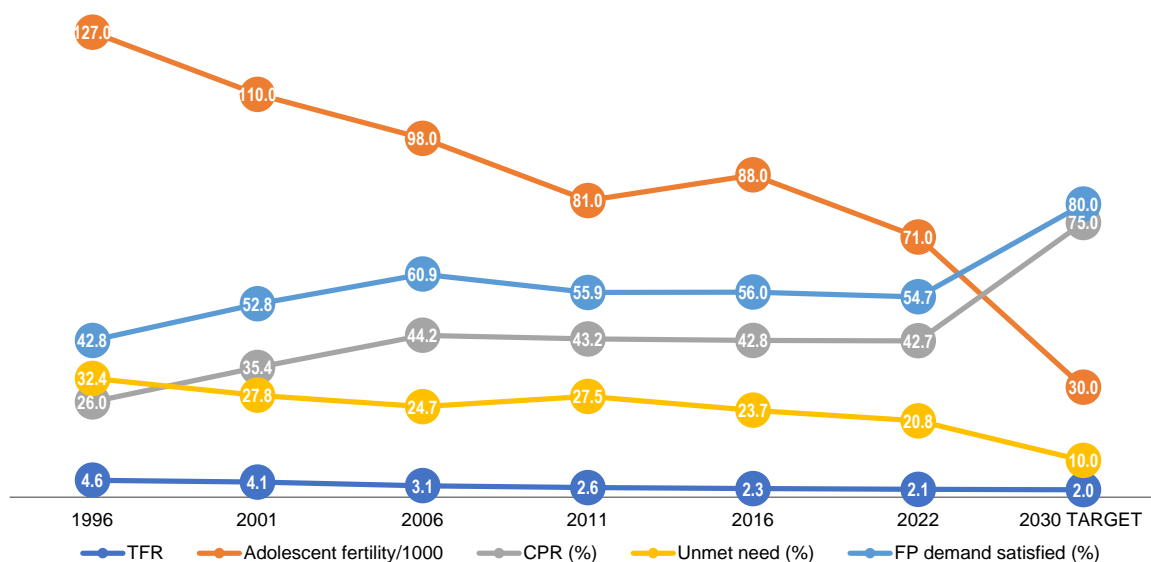
1.1 Context

The FP services in Nepal enable couples to plan their births, space those births, and limit the number of children. High-quality FP services have been proven to reduce maternal morbidity and mortality rates by reducing the number of pregnancies, particularly among high-risk women, and unwanted pregnancies that could lead to abortion, and by improving child health. According to data from the Department of Health Services⁹ in 2020/21, basic health services in Nepal were delivered through 201 public hospitals, 189 primary health care centers (PHCCs), 3,794 health posts, 2,082 non-public facilities, and 11,699 Primary Health Care Outreach Clinic (PHCORC) sites. These services were supported by 49,605 female community health volunteers (FCHV).

Family planning is considered one of Nepal's successful public health programs and has saved the lives of millions of mothers and children by preventing unintended, unwanted, and unplanned pregnancies, maternal deaths, and neonatal deaths. The data show that the utilization of modern FP methods, measured by the contraceptive prevalence rate (CPR) among married women in Nepal, has increased from 26% in 1996¹⁰ to 43% in 2022.¹¹ Female sterilization is the most popular method of FP in Nepal (13.4% female and 3.6% male), followed by injectables (9.3%), oral contraceptive pills (4.5%), male condoms (4.5%), and IUCDs (1.3%). However, the use of traditional FP methods has also increased from 2.5% in 1996 to 14.6% in 2022.¹¹ The unmet need for FP has decreased from 27.5% in 2001¹² to 20.8% in 2022.¹¹ The public sector has been and is the primary source of modern contraceptives (79% in 1996 to 70% in 2016), with the private sector and other sources making up the difference.^{10,13}

The NDHS data also indicate that the total fertility in the country between 1996 and 2022 has declined from 4.6 to 2.1 children per woman.^{10,11} In contrast, although the contraceptive prevalence rate (CPR) increased from 26% to 44% between 1996 and 2006^{10,1} CPR has remained stagnant at around 43% between 2006 and 2022 (Figure 1).

Figure 1 Trend of selected reproductive health indicators, NDHS 1996–2022



Source: Pradhan et. al. 1997; MOHP, New ERA, and Orc Macro 2002; MOHP, New ERA and Macro International Inc. 2007; MOHP, New ERA, and ICF 2012, 2016 MOHP; New ERA; and ICF 2022; NPC 2017.

The GoN aims to improve the health of all people by facilitating informed choices for accessing and utilizing client-centered high-quality voluntary FP. The government has committed to improving the selected FP-related impact indicators in its SDG goals: increasing the modern contraceptive prevalence rate to 75%; reducing the unmet need for FP to 10%; and increasing the country's ability to meet the demand for modern methods of FP to 80% by 2030. To achieve these goals on time, Nepal must identify gaps and possible areas of improvements by exploring its ongoing FP program and focusing on the delivery environment.⁶

1.2 Objectives of the Study

This study highlights changes in service availability, service readiness, the process of care, and client satisfaction with FP services provided by the public and private health facilities in Nepal between 2015 and 2021.

The objectives of this study are to:

- Assess changes in the availability of FP services at health facilities
- Assess changes in the infection prevention and control
- Assess changes in the FP commodity management
- Assess changes in management meetings and quality assurance monitoring
- Assess changes in family planning service readiness
- Assess changes in providers' adherence to delivering quality FP services
- Assess changes in client satisfaction with FP services

2 METHODOLOGY

2.1 Data Collected in 2015 and 2021 NHFS

The data for this study come from the nationally representative Nepal health facility surveys (NHFS) conducted in 2015 and 2021.^{13,11} The 2015 survey included a sample of 1,000 health facilities, while the 2021 survey included 1,633 facilities. Both NHFS collected data from hospitals, primary health care centers (PHCC), health posts (HP), community health units (CHU), urban health centers, and HIV testing and counseling centers across seven provinces of Nepal. The standalone HIV testing and counseling centers were not included in this analysis. The surveys included both public and private facilities.

The details of the sampling procedures for both surveys can be found in the final reports of these surveys.^{13,11} The details of the sample size in the current study can be seen in Table 1.

Table 1 Survey year and sample size of health facilities and clients

Sample size/survey year	NHFS 2015	NHFS 2021
At facility level		
Total number of surveyed facilities	963	1,576
Number of facilities (after excluding standalone HIV testing and counseling centers) ¹	940	1,565
Number of facilities that offer FP services	919	1,529
At client level		
Observation/exit interview of FP clients	768	848

HIV = human immunodeficiency virus, FP = family planning

¹ Standalone HIV testing and counseling centers were excluded because they do not provide FP services.

Source: MOH, New ERA, NHSSP and ICF 2017; MOHP, New ERA, and ICF 2022b.

The data for the analysis of FP service provision were collected with the following methods:

- The inventory assessment collected information on staffing, training, infrastructure and equipment, medicines, supplies, service components, work environment including staff meetings, quality assurance, management committee meetings, external supervision in the past four months before the interview, which were verified through observation
- Observation of services provided to FP clients to assess if the service providers adhered to FP service delivery guidelines and standards
- Exit interviews with the clients who sought FP services at the facility. These included their experiences as service seekers at the facility, opinions on the instruction provided to them, the perception of the quality of treatment received, and specific characteristics about their background.

2.2 Description of Variables

Service Availability: We defined service availability as the availability of any modern FP service for five or more days per week. The FP services refer to facilities that provide, prescribe, or counsel clients on any of the following temporary modern methods of FP:

- a) combined oral contraceptive pills
- b) progestin-only injectables
- c) injectables
- d) male condoms
- e) intrauterine contraceptive devices (IUCDs)
- f) implants

The change in the overall availability of the service offered was examined by constructing a service availability index variable that shows the overall number of temporary modern methods offered at a facility (Appendix Table A1.1). Male and female sterilization are also included in the analysis, but are excluded in the list of methods (a-f) used to construct the overall service availability index.

Infection Prevention and Control: Facilities that offer FP services are expected to adopt standard precautions for infection prevention and control that apply to all aspects of client care. To assess the presence of functioning infection prevention and control tools in the health facilities at the time of the surveys, this section compares the availability of the 12 items in both the 2015 and 2021 surveys.

We defined infection prevention and control as presence of the following items for infection control (Appendix Table A1.2) in areas where family planning takes place:

- a) running water
- b) soap
- c) alcohol-based hand rub
- d) disinfectant antiseptics (for floors)
- e) waste receptacle
- f) other waste receptacles
- g) disposable latex glove
- h) medical mask
- i) gowns and aprons
- j) eye protection goggles
- k) auto-disable or single use standard disposable syringes with needles
- l) needle destroyer

FP Commodity Management: We defined FP commodity management as the practice adopted to store, organize, and procure contraceptives that includes:

- a) FP commodity stockout in last 6 months
- b) storage conditions of contraceptives in facilities
- c) commodities organized according to date of expiry
- d) whether or not the computer system used to monitor contraceptive commodities received, issued, and in-stock
- e) time received last routine supply of contraceptives
- f) the quantity of contraceptive commodity required and commodities

Service Readiness: The service readiness index was constructed with the WHO Service Availability and Readiness Assessment (SARA) indicator guideline^{14,15} which uses metrics such as the availability of FP-trained service providers, devices to measure blood pressure, the existence of FP guidelines, and selected FP commodities.¹⁵ Service readiness was measured as the availability of FP guidelines and training, basic equipment, and commodities (Appendix Table A1.3). An FP service readiness index was computed with the following relevant variables:

- a) **Staff and guidelines component:** The availability of FP guidelines and FP training received by the service providers.
- b) **The availability of basic equipment:** The availability of a functional digital or manual blood pressure (BP) apparatus and stethoscope.
- c) **Commodities component:** Availability of combined pills, progestin-only pills, injectables, and male condoms.

An index variable was created to measure the overall changes in the presence of the related items in the facility between 2015 and 2021. Items included in this index are listed in Appendix Table A1.4.

Management Meetings and Quality Assurance Monitoring: Staff meetings, management meetings, and quality assurance monitoring activities play an important role in monitoring for quality FP service assurance. In this study, these are defined as having

- a) Routine staff meetings once at least in the last 6 months,
- b) Routine meetings about health facility activities or management issues of both service providers and community/community committee members once at least in the last 6 months,
- c) Quality assurance (maintaining the records or minutes from meeting) activities in the last year.

Process of Care: Adherence to process of care was assessed through observation of FP consultations and measured against the norms of quality FP service delivery protocols.

The process of care indicator was analyzed only for FP service. A total of 24 variables were selected to assess the quality of FP service in this study. These variables were based on the available data and were included in the “National Medical Standard For Reproductive Health.”¹⁶ These variables were divided into six broad domains (Appendix Table A2.1):

- a) **Client history:** last delivery date or age of youngest child, current pregnancy status, regularity of menstrual cycle, age of client, number of living children, desire for a child or more children, desired timing for birth of next child, smoking, symptoms of sexually transmitted infections (STIs), and any chronic illnesses;
- b) **Physical examination:** a physical examination that included recording the client’s blood pressure and weighing the client;

- c) **Partners and STIs:** discussion about partner's attitude toward FP, use of condom to prevent STIs, and use of condom as a dual method;
- d) **Questions and concerns:** whether the provider asked if he/she had questions/concerns on FP method and discussion on concerns about side effects of FP method;
- e) **Privacy and confidentiality:** visual privacy, audio privacy, and assurance of confidentiality;
- f) **Additional provider's actions:** individual client card reviewed before consultation, wrote on the client's health card, used visual aids for health education or counseling, and discussed follow up/return visits.

Client Satisfaction: The NHFS 2015 and 2021 asked FP clients about their concerns and issues related to FP services they received on the day of the visit. Client satisfaction in this study was assessed with 11 questions asked to clients about their concerns or experiences of the services they received at a facility in a client exit interview (Appendix Table A3.1). They were:

- a) waiting time to see provider
- b) ability to discuss problem
- c) amount of explanation received about the problem or treatment
- d) privacy from having others see the examination
- e) privacy from having others hear your consultation/discussion
- f) availability of medicines
- g) hours of service at facility
- h) number of days services are available
- i) cleanliness of facility
- j) treatment by the staff
- k) cost of facility

The questions asked if the client had a major problem, minor problem, or no problem in different aspects of the service they received. Clients could also report that they don't know. Binary variables were constructed from each question about the client having no problem with the service. Therefore, having any problem with the service or responding don't know was identified as dissatisfied with the service and given a value of one.

These different domains were assessed by the background characteristics appropriate for the level of analysis. At the facility level, the background characteristics in the study included the facility type, managing authority, ecological region, and province. In this study, public hospitals include hospitals at the federal, provincial, and local levels. The primary health care center (PHCC) is a separate public health facility category, and the basic health care centers category includes public health posts and urban health centers. All facilities that provide healthcare services through private hospitals or non-public health facilities are categorized as the private sector.

At the client level, the major variables were from the observation checklist described in the process of care section and the client satisfaction section described above.

2.3 Data Analysis

Indices for service availability, infection prevention and control, service readiness, process of care, and client satisfaction were created to examine the overall changes in the respective areas. To facilitate comparison, we developed scores with a simple additive index. Researchers commonly use simple additive indices to produce scores by summing the responses to binary variables where 1 indicates the presence of an item in the index and 0 indicates the absence of the item. All binary indicators are added, and then the sum is divided by the total number of indicators. The result is then multiplied by 100 to obtain a score (%).

We conducted descriptive analyses of FP service availability, FP methods offered, infection prevention and control, FP commodity management, management meetings and quality assurance monitoring, basic equipment and items for FP service delivery, and service readiness at facility level. Similarly, at the client's level, the provider adherence to provision of FP service standards of quality care and clients' opinions of the FP service on the day they received care were examined along with the background characteristics and the index variables. The results were compared between the results from the NHFS 2015 and 2021 using t-tests. Only significant changes were discussed between the two surveys, with statistical significance determined by a p value $< .05$ and 95% confidence interval (95% CI).

As the health facility sample was stratified, sampling weights were calculated based on sampling probabilities for each sampling stratum. To ensure the actual representation of the survey results, we applied sampling weights and considered the complex sample design during analysis. The analysis was conducted using STATA 17.0 (Stata Corp, College Station TX, USA).

2.4 Ethical Considerations

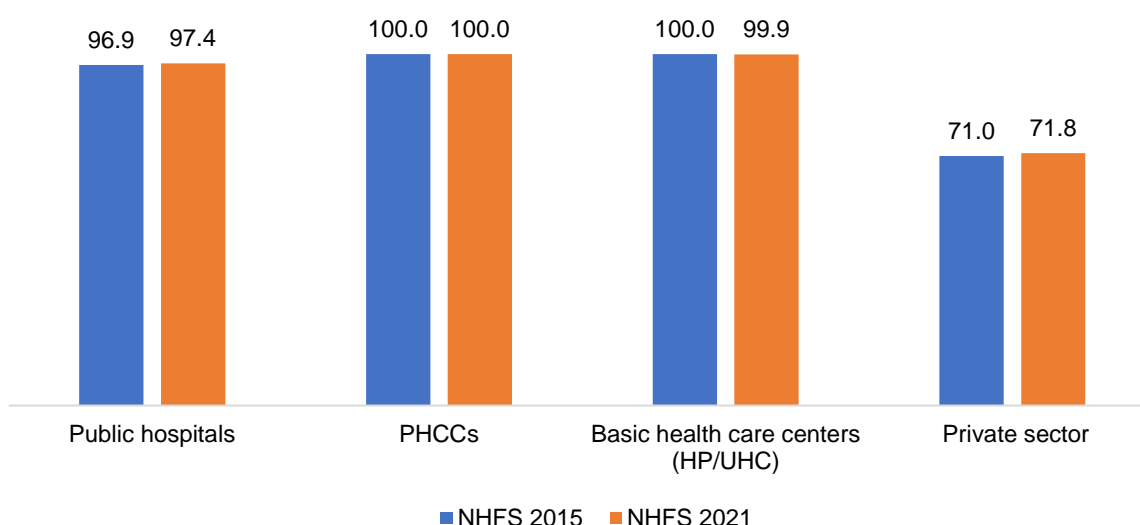
Both NHFS protocols were reviewed and approved by the Nepal Health Research Council (NHRC) and the institutional review board of ICF. We used a de-identified publicly available dataset from the DHS website (www.dhsprogram.com) for this analysis. In both surveys, the interviewers obtained informed consent from the staff in charge of the health facility, service providers, and the clients who were observed or participated in exit interviews.

3 RESULTS

3.1 Availability of Family Planning (FP) Services

Figure 2 shows the distribution of facilities from the NHFS 2015 and 2021 that offer at least one FP service by type of facility, managing authority, ecological region, and province. Both surveys indicate that a vast majority (98%) of health facilities in Nepal offer at least one modern FP method, either by providing, prescribing, or counseling clients (Appendix Table 1).

Figure 2 Percentage distribution of type of facility that provides at least one modern family planning service, NHFS 2015 and 2021



Note: PHCC = primary health care center, HP = health post, UHC = urban health center

Between 2015 and 2021, the proportion of facilities that offer FP services only declined in Gandaki Province (-0.8 percentage points, $p < .05$) (Appendix Table 1).

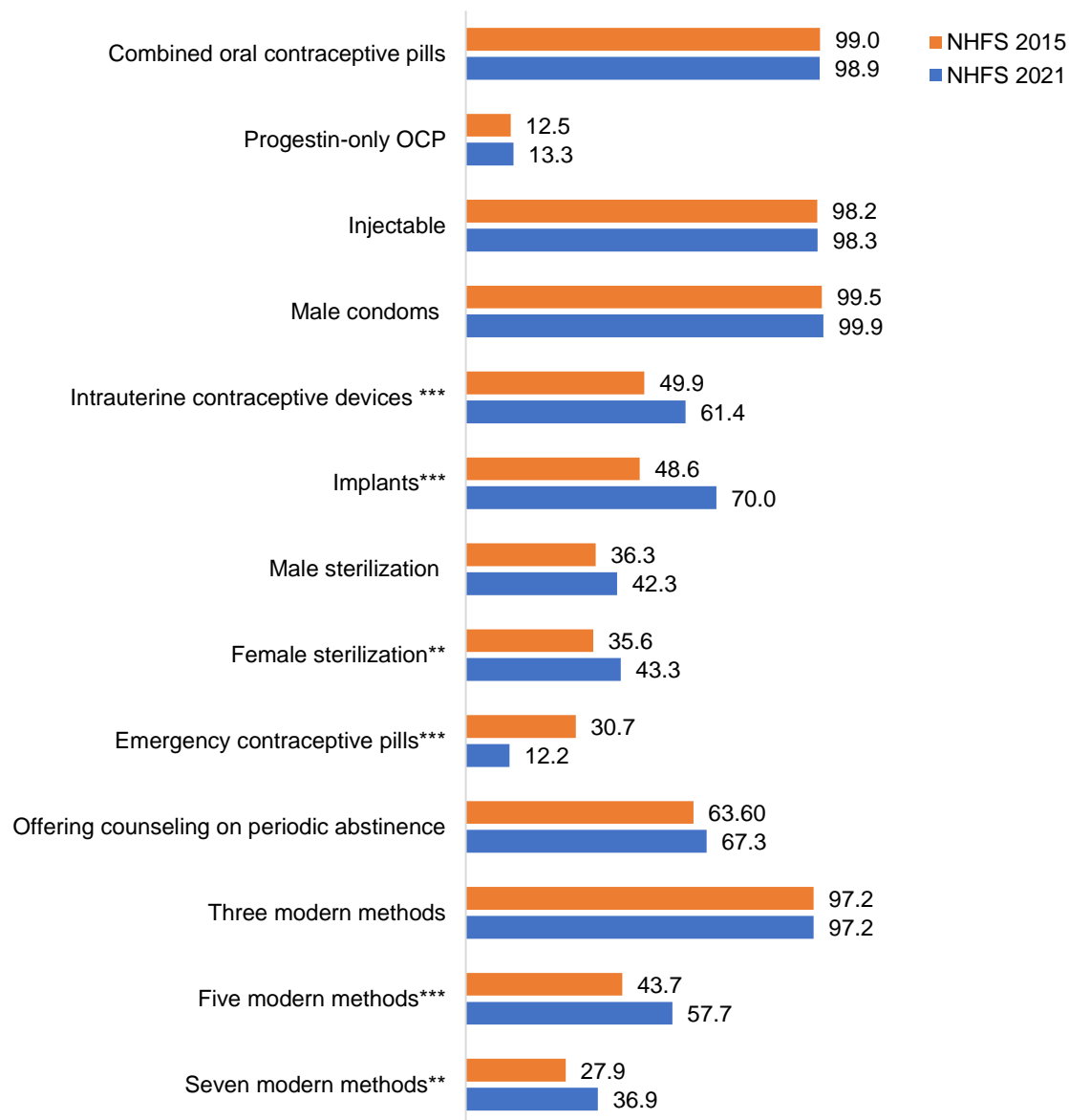
Specific Methods

Among the modern FP methods offered at health facilities between 2015 and 2021, intrauterine contraceptive devices were offered by 49.9% in 2015, which increased to 61.4% in 2021, which was an increase of 11.5 percentage points ($p < .001$). Similarly, implants were offered at 48.6% of health facilities in 2015, which increased to 70% in 2021 ($p < .001$). Female sterilization was offered at 35.6% of health facilities in 2015 and increased to 42.2% of health facilities in 2021 ($p < .01$). Emergency contraception pills (ECP) were offered at 30.7% of health facilities in 2015 and declined to only 12.2% in 2021 ($p < .001$). Less than 3 in 10 (27.9%) facilities offered seven modern methods of contraceptives in 2015, and this increased to 36.9% in 2021 ($p < .01$) (Appendix Table 2).

Significant increases were observed in the proportion of facilities that offer IUCD, implants, and female sterilization between 2015 and 2021, with a significant decrease in the proportion of facilities offering ECP

(Figure 3). In addition, the proportion of facilities that offer five modern ($p < .01$) and seven modern methods ($p < .05$) in 2021 compared to 2015 also showed significant improvement.

Figure 3 Percentage of health facilities that offer specific family planning methods, by method and quantity of methods, NHFS 2015 and NHFS 2021



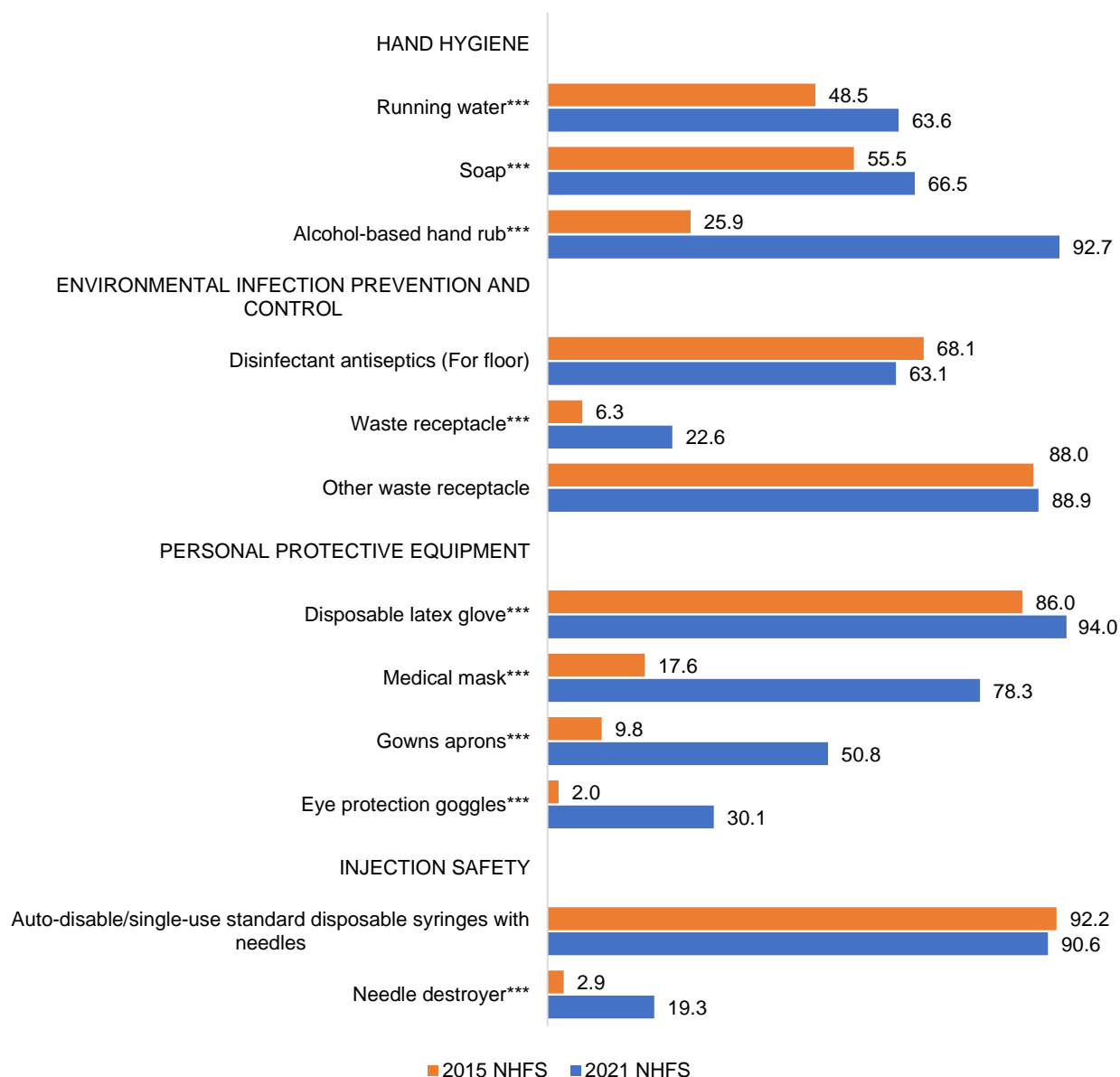
Note: *** $p < .001$, ** $p < .01$, * $p < .05$

The availability of FP services 5 or more days a week in 2015 compared to 2021 remained almost constant for all facilities and across all background characteristics (Appendix Table 2).

3.2 Infection Prevention and Control

Results of the analysis of infection prevention and control observed in and around the FP service delivery areas in facilities that provide at least one modern method of FP in the NHFS 2015 and 2021 are shown in Appendix Table 3 and Figure 4.

Figure 4 Percentage distribution of tools for infection prevention and control observed in and around the family planning service delivery areas in facilities that provide at least one modern method of family planning, NHFS 2015 and 2021



Note: *** p < .001, ** p < .01, * p < .05

The availability of most infection prevention and control tools in health facilities has significantly improved between 2015 and 2021. The improvements range from an increase of 66.8 percentage points ($p < .001$) for alcohol-based hand rub to 8 percentage points ($p < .001$) for disposable latex gloves.

The overall composite index mean score of infection prevention and control constructed with the 12 markers of infection prevention and control areas on a 100-percentage point scale shows that there has been a 21-percentage point ($p < .001$) improvement in this infection prevention and control score in 2021 compared to 2015 (Appendix Table 3). These improvements in the availability of infection prevention and control resources at health facilities between 2015 and 2021 in part may be due to COVID-19 related interventions.

The disaggregated analysis of the overall infection prevention and control score, organized by background characteristics of health facilities, also shows significant improvements ($p < .001$) by facility type in 2021 compared to 2015 and remains true across all facility characteristics in Table 2.

Table 2 Change in infection prevention and control index by select background characteristics of facilities that offer family planning services, NHFS 2015 and 2021

Background characteristics of facilities	NHFS 2015 (n=919) % (95% CI)	NHFS 2021 (n=1,529) % (95% CI)	Difference (percentage points)	p value
Types of facilities				
Public facilities	41.2 [39.8, 42.6]	62.9 [61.5, 64.4]	21.7	***
Public hospitals	56.0 [52.7, 59.3]	77.3 [74.0, 80.5]	21.3	***
PHCCs	45.2 [43.0, 47.4]	65.3 [62.6, 68.0]	20.1	***
Basic health care centers	40.6 [39.1, 42.1]	62.4 [60.8, 63.9]	21.8	***
Private hospitals	54.7 [49.6, 59.7]	71.6 [68.1, 75.2]	17.0	***
Ecoregion				
Mountain	39.7 [36.7, 42.8]	62.6 [58.7, 66.5]	22.8	***
Hill	43.5 [41.4, 45.6]	66.6 [64.6, 68.6]	23.1	***
Terai	40.3 [38.3, 42.3]	60.6 [58.4, 62.8]	20.3	***
Province				
Koshi	39.9 [36.5, 43.4]	55.5 [51.7, 59.3]	15.6	***
Madhesh	36.0 [33.0, 39.1]	54.9 [50.6, 59.2]	18.9	***
Bagmati	44.2 [40.9, 47.5]	71.8 [69.1, 74.4]	27.5	***
Gandaki	45.3 [41.3, 49.3]	65.9 [62.7, 69.1]	20.6	***
Lumbini	47.9 [45.1, 50.7]	65.7 [62.3, 69.0]	17.7	***
Karnali	41.9 [37.0, 46.9]	66.7 [62.9, 70.6]	24.8	***
Sudurpaschim	38.0 [33.7, 42.4]	63.4 [60.3, 66.5]	25.4	***

Note: FP = family planning, PHCC = primary health care center, *** $p < .001$.

3.3 FP Commodity Management

Table 3 presents a comparative analysis of the commodity management in health facilities that offer FP service between 2015 and 2021. The analysis indicates that for most commodities, there were no changes in stockouts between the surveys (Table 3). However, combined oral contraceptive pills had a 7.3 percentage point increase ($p < .01$) in stock-outs in 2021 compared to 2015.

One of the three indicators related to the storage conditions of contraceptives among facilities that provide FP services, “a well-ventilated room for commodity storage”, improved by 8.2 percentage points ($p < .001$) between 2015 and 2021. No changes were observed in the contraceptive commodities organized according to the expiration date and the computer system used to monitor contraceptive commodities received, issued, and stocked between 2015 and 2021.

There was a significant improvement in the percentage of health facilities that received commodities within two weeks of placing an order (10.0 percentage points, $p < .001$) (Table 3).

Table 3 Change in family planning commodity management indicators in health facilities that offer family planning services, NHFS 2015 and 2021

	2015 NHFS		2021 NHFS		Difference (percentage points)	p value
Commodity management indicators	%	(n)	%	(n)		
FP commodity stockout in last 6 months	(Among facilities providing particular method)					
Combined oral contraceptive pills	15.7	910	23.0	347	7.3	**
Injectable	13.8	903	16.4	246	2.6	NS
Condoms	17.7	915	14.0	213	-3.7	NS
IUCD	10.0	459	8.0	76	-2.0	NS
Implant	10.5	447	7.9	84	-2.6	NS
ECP	8.5	282	11.0	20	2.5	NS
	Among those who provides at least one method of FP					
Storage conditions of contraceptives in facilities that provide at least one method of FP	(n=919) %		(n=1,529) %		Difference (percentage points)	P value
Commodities off the floor	95.6		95.7		0.1	NS
Commodities protected from water	96.1		97.5		1.4	NS
Commodities protected from the sun	96.4		97.0		0.6	NS
Room is clean of evidence of rodents (bats, rats, pets)	80.6		81.9		1.3	NS
Well-ventilated commodity storage room	83.4		91.6		8.2	***
Contraceptives commodity management						
All contraceptive commodities organized according to date of expiry	89.7		90.4		0.7	NS
Daily or not daily, the computer system used to monitor contraceptive commodities received, issued, and in-stock	21.3		21.3		0.1	NS
Time received last routine supply of contraceptives						
Within prior 4 full weeks	54.7		60.4		5.7	NS
Facilities that determine the quantity of contraceptive commodity required and orders as per need	78.4		81.0		2.6	NS
Ordered FP commodities received within 2 weeks	71.2		81.2		10.0	***

Note: IUCD = intrauterine contraceptive device, ECP = emergency contraceptive pill, *** $p < .001$, ** $p < .01$, NS = non-significant

3.4 Management Meetings and Quality Assurance Monitoring

Table 4 shows the comparative analysis of staff meetings, management meetings, and quality assurance monitoring activities reported in the 2015 and 2021 surveys. The analysis showed significant improvements in the proportion of facilities that held at least one staff management meeting in last six months in 2021, which increased by 13.7 ($p < .001$) percentage points from 2015. Similarly, the proportion of facilities that held management meetings at least once in 6 months in 2021 increased by 14.3 ($p < .001$) percentage points compared to 2015. This indicated that between 2015 and 2021, the practice of organizing meetings at least once every six months significantly improved (Table 4).

Table 4 Change in management meetings and quality assurance performed at a facility that offers family planning service, NHFS 2015 and 2021

Management meetings and quality assurance activity	2015 NHFS (n=919) %	2021 NHFS (n=1529) %	Difference (percentage points)	p value
Routine staff meeting once at least in 6 months	37.5	51.2	13.7	***
Routine meetings about facility activities or management issues of both facility staff and community / community committee members once at least in 6 months	35.9	50.2	14.3	***
Quality assurance took place in last fiscal year	20.1	23.5	3.4	NS
Note: *** p < .001, NS = non-significant				

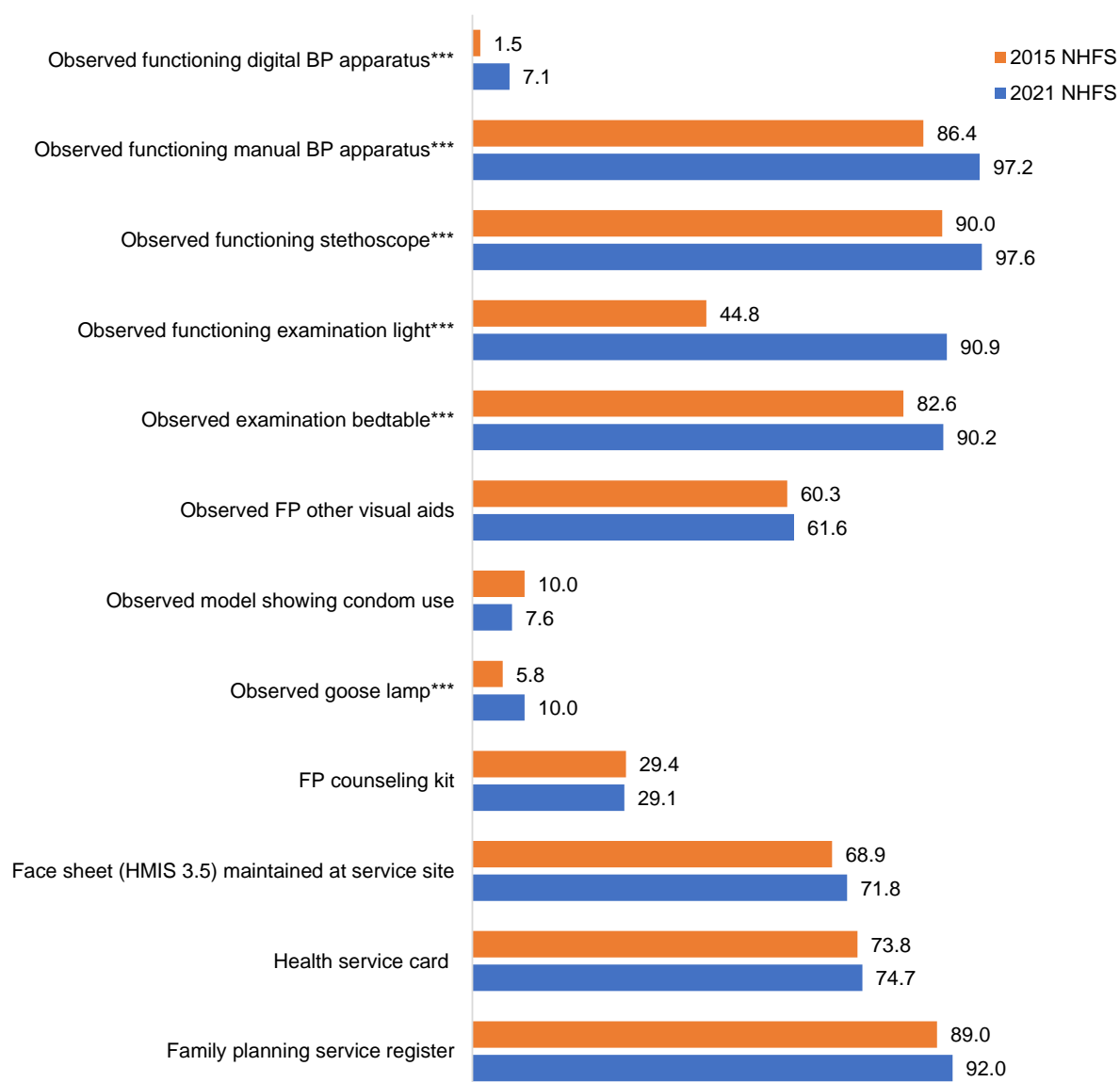
3.5 Service Readiness

Figure 5 shows that only 1.5 of the facilities in 2015 had a functional digital BP apparatus, which increased to 7.1% in 2021 – an increase of 5.6 (p < .001) percentage points.

In 2015, 86% of the facilities had a functional manual BP apparatus, which in 2021 increased to 97% (an increase of 10.8 percentage points). Similarly in 2015, 90% of the facilities had a functioning stethoscope, which increased to 97.6% in 2021 (Appendix Table 4).

The presence of a functioning examination light in 44.8% of the facilities in 2015 increased to 90.9% of the facilities in 2021, an increase of 46.1 (p < .001) percentage points. An examination bedtable was present in 82.6% of facilities in 2015, which increased to 90.2% of the facilities in 2021 – an increase of 7.6 percentage points (p < .001) (Appendix Table 4).

Figure 5 Percentage distribution of types of family planning facilities by basic equipment and tools for family planning service delivery observed in health facilities at the time of the survey, NHFS 2015 and 2021



Note: HF = health facility, BP = blood pressure, FP = family planning, Asterisks in figure indicate the p value of the difference between the surveys with *** $p < .001$.

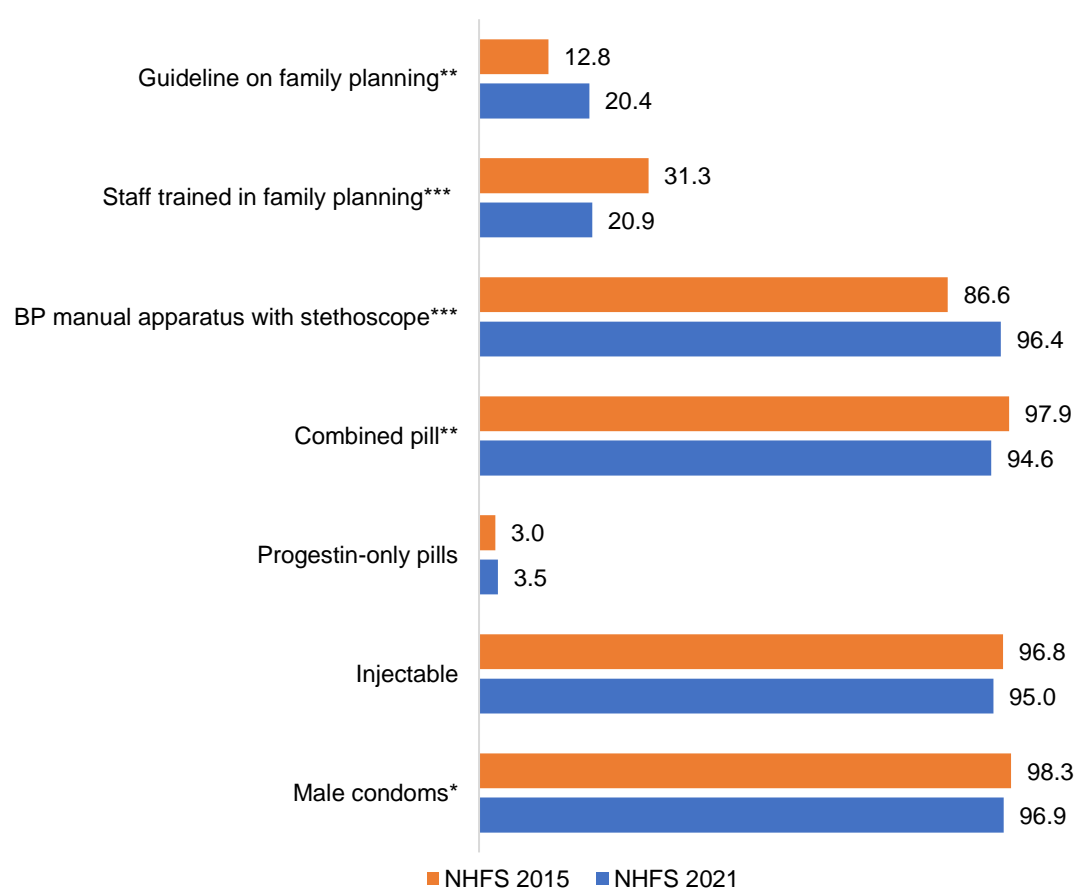
The presence of a goose lamp was observed in 5.8% of the facilities in 2015, which grew to 10% in 2021—an increase of 4.2 ($p < .001$) percentage points (Appendix Table 4).

Of the 12 types of basic equipment and tools for FP service delivery, there was no significant change in the availability of the following five tools between 2015 and 2021: other FP visual aids, model showing condom use, FP counseling kit, fact sheet, and health service card (Appendix Table 4).

However, the mean of the composite index of basic equipment and tools shows an improvement in the availability of basic equipment and FP service delivery items in 2021 compared to 2015 (an increase in the mean by 7.3 percentage points ($p < .001$) (Appendix Table 4).

Figure 6 shows the distribution of each FP tool in 2015 and 2021 that was used to construct the service readiness index. Of the seven items used to construct the service readiness index, the analysis revealed marked improvements in the availability of two items between 2015 and 2021 (Appendix Table 5). For example, facilities with available FP guidelines increased from 12.8% in 2015 to 20.4% in 2021—an increase of 7.6 percentage points ($p < .01$). Similarly, facilities that had access to a digital or manual blood pressure apparatus with a stethoscope increased from 86.6% in 2015 to 96.4% in 2021 – an increase of 9.8 ($p < .001$) percentage points (Appendix Table 5).

Figure 6 Distribution of health facilities by indicators of service readiness, NHFS 2015 and 2021



Note: BP = blood pressure. Asterisks in figure indicate the p value of the difference between the surveys with *** $p < .001$, ** $p < .01$, * $p < .05$.

There was also negative growth in some items of the service readiness index between 2015 and 2021. Facilities with trained FP staff declined in 2015 from 31.3% to 20.9% - a decline of 10.4 percentage points ($p < .001$). Facilities with an observed stock of combined OCPs and condoms during service delivery in the facility showed negative growth (Appendix Table 5).

Differences in the service readiness index by selected health facility characteristics is shown in Table 5. All the facilities had the same level of service readiness in 2015 and 2021, with the exception of a slight decrease in the Gandaki Province.

Table 5 Change in the service readiness index by selected background characteristics of health facilities that offer family planning services, NHFS 2015 and 2021

Facility background characteristics	NHFS 2015 (n=919)		NHFS 2021 (n=1,529)		Difference (percentage points)	p value
	%	95% CI	%	95% CI		
Mean index of service readiness	61.0	[60.0, 62.0]	61.1	[60.3, 61.9]	0.1	NS
Types of facilities						
Public facilities	61.5	[60.5, 62.6]	60.0	[61.2, 62.8]	0.4	NS
Public hospitals	67.6	[65.2, 70.0]	68.9	[66.9, 70.9]	1.3	NS
PHCCs	65.7	[64.3, 67.2]	66.7	[65.1, 68.2]	1.0	NS
Basic health care centers	61.2	[60.1, 62.3]	61.9	[60.7, 62.5]	0.7	NS
Private hospitals	50.8	[46.3, 55.4]	45.8	[41.2, 50.4]	-5.0	NS
Ecoregion						
Mountain	61.0	[59.2, 62.8]	61.7	[59.3, 64.1]	0.7	NS
Hill	61.3	[59.9, 62.8]	60.6	[59.5, 61.8]	-0.7	NS
Terai	60.4	[58.7, 62.1]	61.3	[59.9, 62.7]	0.9	NS
Province						
Koshi	59.0	[56.7, 61.4]	61.5	[59.5, 63.5]	2.5	NS
Madhesh	59.1	[56.5, 61.7]	60.2	[57.4, 63.1]	1.1	NS
Bagmati	60.0	[57.9, 62.2]	58.5	[56.6, 60.6]	-1.5	NS
Gandaki	63.4	[60.8, 66.1]	59.4	[57.8, 61.0]	-4.0	*
Lumbini	64.2	[61.7, 66.7]	63.3	[61.5, 65.2]	-0.9	NS
Karnali	60.1	[56.4, 63.8]	62.4	[60.1, 64.7]	2.3	NS
Sudurpaschim	62.3	[59.7, 63.0]	64.4	[62.5, 66.4]	2.1	NS

Note: PHCC = primary health care center, * p<0.05, NS = non-significant.

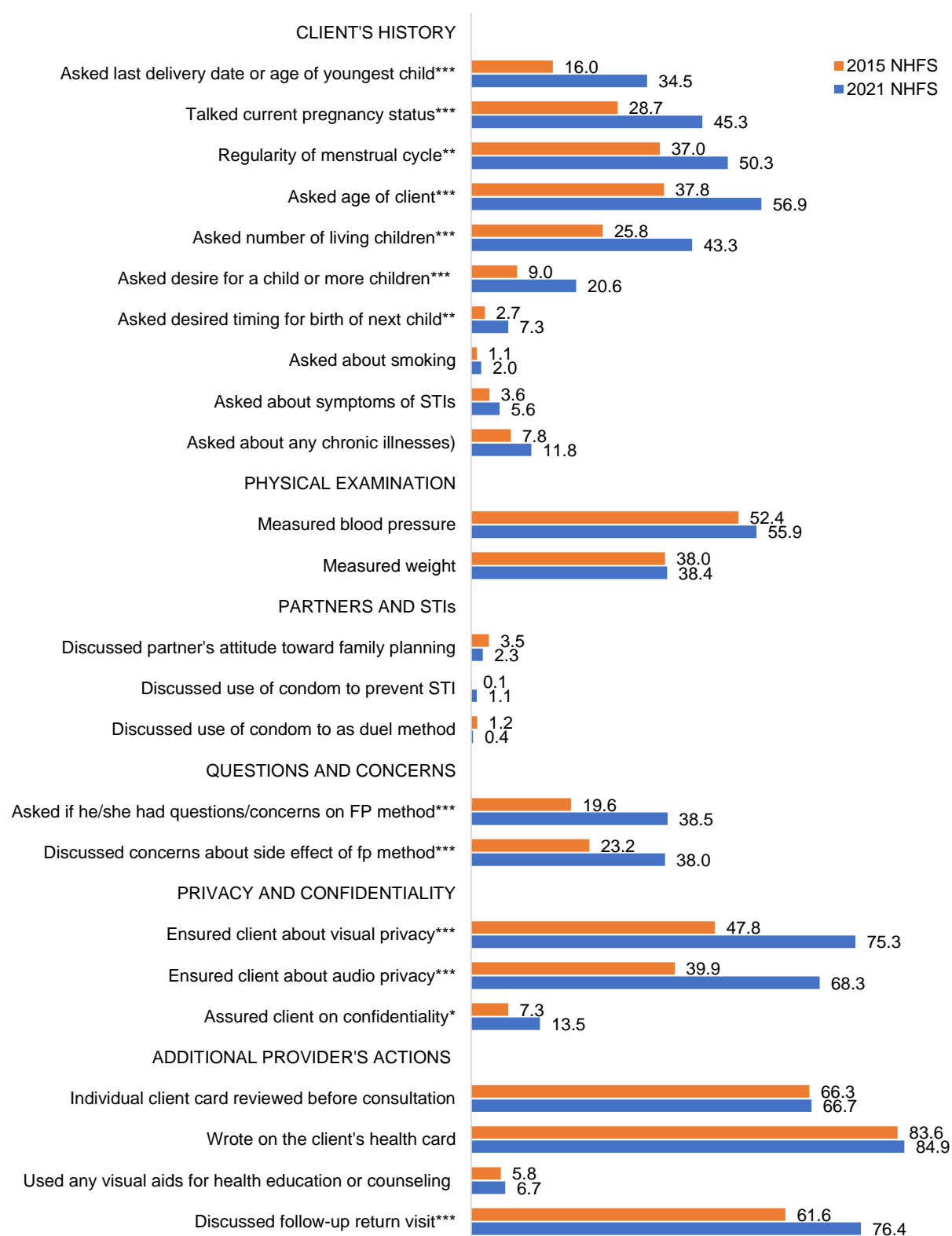
3.6 Process of Care

Figure 7 shows significant improvements in the provider's adherence to quality FP service standards. Seven of the ten indicators in the client history domain increased: asked last delivery date or age of youngest child by 18.5 (p > .001) percentage points, talked about current pregnancy status by 16.6 (p > .001) percentage points, asked about the regularity of menstrual cycle by 13.3 (p > .01) percentage points, asked the age of client by 19.1 (p > .001) percentage points, asked the number of living children by 17.5 (p > .001) percentage points, asked about the desire for a child or more children by 11.6 (p > .001) percentage points and, asked about the desired timing for birth of next child by 4.6 (p > .01) percentage points (Appendix Table 6).

The provider's adherence to the two indicators of providing quality FP service delivery under the physical examination domain measured blood pressure and weight and the three indicators in the discussion of partners and STIs section discuss partner's attitude toward FP, use of a condom to prevent STIs, and use of a condom as dual method of FP remained same and did not show any changes between 2015 and 2021.

The providers' compliance to providing quality FP service delivery on two indicators under the questions and concerns domain asked if he/she had questions/concerns on FP method increased by 18.9 (p > .001) percentage points and discussed concerns about side effect of FP method increased by 14.8 (p > .001) percentage points in 2021 compared to 2015.

Figure 7 Indicators of providers' adherence to standards of quality family planning service during service delivery at a family planning facility, NHFS 2015 and 2021



Note: STI = sexually transmitted infection, FP = family planning. Asterisks in figure indicate the p-value of the difference between the surveys with *** p<.001, ** p<.01, * p<.05.

Similarly, under the privacy and confidentiality domain that ensured clients visual privacy increased by 27.5 ($p > .001$) percentage points and ensured client audio privacy by 28.4 ($p > .001$) percentage points and assured client on confidentiality by 6.2 ($p > .05$) percentage points in 2021 compared to 2015 (Appendix Table 6).

Under the additional provider actions domain, only one of the four items - discussed follow-up visits increased by 14.8 ($p > .001$) percentage points between 2015 and 2021 (Appendix Table 6).

The overall analysis suggests that the providers' FP service delivery in 2021 improved markedly from 2015. The changes in the mean providers' FP service standards are also examined by selected characteristics of health facilities. The results of the analysis are shown in Appendix Table 6.

The analysis reveals that almost all types of facilities had improvement in providers' adherence to standards of quality FP service provision between 2015 and 2021, except in facilities from the mountain regions and the Bagmati and Karnali provinces. The difference in the levels of the overall index of providers' adherence to providing quality service in 2021 compared to 2015 also significantly improved (Appendix Table 7).

Table 6 shows the proportion of clients for whom the provider covered all items in each domain of quality FP service delivery. Only two of the five domains: questions and concerns items ($p < .01$) and privacy and confidentiality items ($p < .05$) show improvements in the proportion of clients administered all items of quality FP services in 2021 compared to that in 2015.

However, the proportion of clients administered all items of provision of quality FP service delivery in all six domains was below 35% in both surveys (Table 6).

Table 6 Family planning clients administered with all items covered under six domains related to standards of quality service delivery at the time of service, NHFS 2015 and 2021

Domains of provision of quality FP service delivery at facility	2015 NHFS (n=768) (%)	2021 NHFS (n=848) (%)	Difference (percentage points)	p value
Client history (item n=10)	0.0	0.7	0.7	NS
Physical examination (item n=2)	34.5	33.3	-1.2	NS
Discussion of partners and STIs (item n=3)	0.1	0.0	-0.1	NS
Questions and concerns items (item n=2)	10.4	22.2	11.8	**
Privacy and confidentiality (item n=3)	6.0	12.0	6.0	*
Additional provider's actions (item n=4)	3.3	3.6	0.3	NS

Note: FP = family planning, STI = sexually transmitted infection, ** $p < .01$, * $p < .05$, NS = non-significant.

3.7 Client Satisfaction

All FP clients were asked about their opinion on issues commonly related to the service they had received that day. The analysis shows that seven of the eleven questions related to the problems of service delivery reported in 2021 has significantly declined compared to 2015. The three top common complaints that sharply decreased in 2021 compared to 2015 were – privacy from having others hear your consultation/discussion by -9.8 ($p < .01$) percentage points, followed by privacy from having others see the examination by -9.5 ($p < .01$) percentage point and waiting time -8.1 ($p < .01$) percentage points (Table 7).

Table 7 Change in family planning client's complaints on family planning service on the day of service they took, NHFS 2015 and 2021

Response (reporting problems)	2015 NHFS (n=768) (%)	2021 NHFS (n=848) (%)	Difference (percentage points)	p value
Mean index of common problems	11.8	6.6	-5.2	***
Waiting time to see provider	19.2	11.1	-8.1	**
Ability to discuss problem	14.9	9.3	-5.6	*
Amount of explanation received about the problem or treatment	17.2	11.5	-5.7	NS
Privacy from having others see the examination	16.2	6.7	-9.5	**
Privacy from having others hear your consultation/discussion	16.8	7.0	-9.8	**
Availability of medicines	6.8	1.9	-4.9	**
The hours of service at facility	12.2	5.6	-6.6	**
The number of days services are available	9.7	6.3	-3.4	NS
Cleanliness of facility	9.9	9.0	-0.9	NS
Treatment by the staff	4.6	3.2	-1.4	NS
Cost of service	1.7	0.8	-0.9	*

Note: FP = family planning, *** p < .001, ** p < .01, * p < .05, NS = non-significant.

The overall index of common problems between 2015 and 2021 has declined by -5.17 (p < .001) percentage points. This means that the issues related to the FP service delivery at a facility in 2021 compared to that in 2015 has declined, which is an indicator of better services in 2021 (Table 7).

The analysis disaggregated by facility characteristics portrays similar results (Table 8).

Table 8 Change in mean index of family planning client's concerns/issues and common problems they experienced at the time they visited the facility for service, NHFS 2015 and 2021

Background characteristics of facilities	2015 NHFS (n=768) % (95% CI)	2021 NHFS (n=848) % (95% CI)	Difference (percentage points)	p value
Types of facilities				
Public facilities	11.9 [9.8, 14.0]	6.6 [5.4, 7.8]	-5.3	***
Public hospitals	13.0 [8.7, 17.3]	8.1 [5.5, 10.7]	-4.9	NS
PHCCs	8.4 [6.5, 10.3]	7.6 [5.6, 9.6]	-0.8	NS
Basic health care centers	12.2 [9.6, 14.9]	6.2 [4.7, 7.7]	-6.0	***
Private hospitals	5.2 [0.0, 10.4]	5.8 [0.2, 11.8]	0.6	NS
Ecological regions				
Mountain	11.4 [8.3, 14.5]	5.9 [3.4, 8.5]	-5.5	**
Hill	10.9 [7.6, 14.2]	7.5 [5.9, 9.0]	-3.4	NS
Terai	12.9 [9.9, 15.9]	6.3 [4.5, 8.0]	-6.6	***
Province				
Koshi	11.8 [8.0, 15.5]	9.1 [5.7, 12.6]	-2.7	NS
Madhesh	13.2 [7.8, 18.6]	5.4 [2.5, 8.2]	-7.8	*
Bagmati	8.9 [6.3, 11.5]	7.7 [5.3, 10.1]	-1.2	NS
Gandaki	11.9 [3.7, 27.5]	4.8 [2.3, 7.2]	-7.1	NS
Lumbini	16.6 [9.7, 23.5]	5.1 [2.0, 8.3]	-11.5	**
Karnali	13.2 [7.2, 19.1]	5.0 [2.0, 8.0]	-8.2	*
Sudurpaschim	13.1 [9.4, 16.8]	7.6 [4.9, 10.9]	-5.5	*

Note: FP = family planning, CI = confidence interval, PHCC = primary health care center, *** p < .001, ** p < .01, * p < .05, NS = non-significant

4 SUMMARY

This study examined the changes in the service availability, FP methods offered, infection prevention and control, FP commodity management, management meetings and quality assurance monitoring, basic equipment and items for FP service delivery, service readiness at facility level, providers' adherence to provision of FP service standards of quality care, and clients' opinions of the FP service on the day they received care. The study compared the results obtained from the analysis of the NHFS 2015 and 2021 data.

Service availability and method offered: Modern FP methods offered by health facility included combined oral contraceptive pills, progestin-only injectables (Depo), implants, intrauterine contraceptive devices (IUCDs), male condoms, female sterilization, or male sterilization. In both the NHFS 2015 and 2021, 98% of the facilities were providing at least one method of modern FP. The analysis shows that the proportion of facilities that offer at least one FP method in 2015 are high and similar to 2021 with no significance differences. A similar pattern was found when the data were disaggregated by types of facilities and the location of facilities disaggregated by ecological regions and provinces. However, the proportion of facilities that offer seven modern methods increased by 9 percentage points from 2015 to 2021. This shows that the proportion of facilities providing greater method choice to its clients increased in the time period.

Infection prevention and control: FP service delivery facilities are expected to employ standard precautions for the infection prevention and control practices that apply to all client care in and around service delivery. Among the twelve items of infection prevention and control observed in the survey in and around the FP service delivery areas, there were significant improvements in the availability of most of the infection prevention and control tools (9 of 12 items) in 2021 compared to 2015 except for presence of “disinfectant antiseptics (For floor)”, “other waste receptacle”, and “auto-disable or single use standard disposable syringes with needles.” The overall improvement in the capacity for preventing and controlling infection in health facilities increased by 21.5 percentage points from a mean index score of 41.9 in 2015 to 63.5 in 2021. These changes were seen over all facility types and geographic areas. One possible explanation for this observed improvement may be COVID-19 related interventions.

Contraceptive commodity management: Among facilities that offer FP, there was an increase in stockouts of combined oral contraceptive pills in last six month, from 16% in 2015 to 23% in 2021 (7.3 percentage points). However, contraceptives stored in a well-ventilated room improved by 8.2 percentage points (from 83% to 93% of facilities). Similarly, the FP commodities received within two weeks of order improved by 10.0 percentage points (from 71% to 81%). These findings indicate trends in commodity management are mixed.

Management meetings and quality assurance monitoring: The analysis indicates that conducting the routine staff meeting once at least in 6 months and routine meetings of facility staff and community/committee once at least in 6 months between 2015 and 2021 improved by 14 percentage points, from 37.5% to 51.2%. This means that a greater number of facilities in 2021 compared to that in 2015 reported holding meetings once at least in 6 months.

Possession of basic equipment and items of FP service delivery and service readiness: Adequate infrastructure, functioning equipment, and resources are expected to be available in the facilities that

provides FP services to support quality FP service delivery to clients. Improvement was observed for functioning digital BP apparatus, manual BP apparatus, stethoscope, examination light, and examination bedtable goose lamp. The six items in this domain that remain unchanged between 2015 and 2021 were FP other visual aids, model showing condom use, FP counseling kit, fact sheet maintained at service site, health service card, and FP service register. The overall index of availability of functioning basic equipment and tools for FP service delivery observed at health facilities on the day of service delivery, however, shows that a relatively higher number of facilities (61%) in 2021 possessed basic equipment/instruments compared to (54%) 2015, which was an increase of 7 percentage points.

Of the seven items used to construct the service readiness index, the analysis revealed marked improvements in the availability of two items between 2015 and 2021. Facilities with available FP guidelines increased from 12.8% in 2015 to 20.4% in 2021, an increase of 7.6 percentage points. Similarly, facilities with access to a digital or manual blood pressure apparatus with a stethoscope increased from 86.6% in 2015 to 96.4% in 2021, which was an increase of 9.8 percentage points. There was no change in the overall service readiness of the facilities between 2015 and 2021, despite the observed improvement in the availability of some individual items.

Provider's adherence to provision standards of quality FP service provisions: Observations of FP client-provider interactions provided insight into whether and how well FP providers adhere to the standards of quality FP service provisions. The analysis suggests that the adherence to most domains of quality FP service delivery has improved from 2015 to 2021. The two domains which did not show any changes were physical examination and discussion of partners and STIs. The disaggregated data also shows similar patterns except in facilities from the mountain ecological region and Bagmati and Karnali Provinces. The overall index of providers' adherence to provision of quality FP service improved from 27% in 2015 to 36% in 2021.

Clients' opinions of the FP services on the day they received: The client exit interview data reveals that seven of the eleven questions related to the problems encountered during the visit have significantly declined in 2021 compared to 2015. Since this is a negative indicator, decline indicates improvements in client satisfaction with the service. The overall index declined by 5 percentage points.

5 POLICY IMPLICATIONS

The results from this study point to several policy implications for the government of Nepal to improve FP healthcare delivery. While method choice (availability of all seven methods) in the facilities improved from 2015 to 2021, it is still limited and there is room to improve coverage. In addition, the data on long-acting methods such as IUCDs and implants show that there is a need for increased coverage.

Similarly, while there was improvement in measures of infection prevention and control, there are still large proportions of facilities without essential infection prevention and control equipment/items. Urgent action is needed to assure a sufficient supply of eye protection goggles, gowns, and aprons for use as personal protective equipment; waste receptacles for environmental infection and prevention control; and needle destroyers for injection safety.

There were few improvements observed in the area of FP commodity management. Stockouts, of all FP commodities except combined oral contraceptive pills, showed no changes. Increased attention is needed to minimize the stockout of combined oral contraceptive pills, injectables, condoms, IUCD, and implants. Low levels of computer monitoring for contraceptive commodities management were seen in facilities, this is a potential area for policy and program focus which has potential to impact overall commodity management.

For the basic equipment and tools for FP service delivery, only small proportion of facilities had FP counseling kits, goose lamps, a model to show condom use, and a functioning digital BP apparatus. This suggests an immediate need to provide this basic equipment to some facilities. The findings of the study clearly demonstrate that need to improve the service readiness to deliver quality of FP services, both in the private and public facilities.

Although improvements in the health worker's compliance with selected items of quality FP service was observed, the proportion of clients receiving all items in both 2015 and 2021 is very low. This finding suggests that substantial effort is needed to motivate the providers to be sure and cover all necessary components of quality FP service delivery during each visit.

6 STRENGTHS AND LIMITATIONS

In this study, we utilized data from the nationally representative 2015 and 2021 NHFS datasets. Our measures were designed to be comparable, using a simple additive procedure rather than a weighted additive or principal component analysis approach to define the scores for both surveys. By analyzing data from two consecutive surveys, we can estimate the quantities and uncertainty of current or past events at different points in time. Our analysis can be useful for policymakers to allocate resources and prioritize issues by comparing the two surveys.

While the findings of this study will be useful, it is important to note some of the limitations of this analysis. First, the study focused on the significant differences between the two survey points, so the variables analyzed in the study should not be taken as predictors, nor does this analysis explain the mechanisms of change. Second, many factors in the study were based on provider/client observations during service delivery. It is possible that providers may behave differently when they know they are being observed, a phenomenon known as the Hawthorne effect.¹⁷ However, this has been shown to have minimal impact on the results in similar research.¹⁸ Finally, the reports of problems encountered during the visit reported by clients during the exit interview can be subjective. These responses may depend on perception, expectations, and background characteristics that can lead to biased results when measured with the same scale for all types of FP clients.

7 CONCLUSIONS

This study examines changes in selected indicators of FP service delivery using the NHFS 2015 and 2021 data. The facility inventory data were used to compare selected characteristics of facilities and the condition of FP service delivery in 2021 to 2015. Client observations and client exit interview data were also assessed. The findings of this study can help to guide future plans, policies, and programs related to FP service delivery, which are needed in order to achieve the 2030 SDG goals.

The study clearly demonstrates that many indicators of FP service delivery have significantly improved in 2021 compared to those in 2015. This includes methods of FP offered, infection prevention and control, commodity management, equipment and tools required for FP service delivery, and some items of FP service readiness, and FP providers' compliance with steps to deliver quality service at facilities. However, the analysis reveals that the overall service readiness index did not show improvement, which suggested that there are barriers to delivering quality FP services in Nepal. Some indicators related to the FP services offered, such as infection prevention and control, commodity management, equipment and tools required for FP service delivery, and FP providers' compliance to standards of quality service delivery at facilities show significant improvement in 2021 compared to 2015. In the future, FP programs should focus on the barriers and improve the conditions in order to provide improved FP services to the people of Nepal.

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APPENDIX

Appendix Table 1 Change in health facilities that offer any modern methods of family planning services by selected background characteristics, NHFS 2015 and 2021

Background characteristics	Facilities that offer FP services (2015) (%)	Total facility n	Facilities that offer FP services (2021) (%)	Total facility n	Change between 2015–2021 (% points)	p value
Total HFs covered in the survey	97.8	940	97.8	1,564	0.0	NS
Types of facilities¹						
Public facilities	99.9	870	99.9	1,448	0.0	NS
Public hospitals	96.9	21	97.4	44	0.5	NS
PHCCs	100.0	43	100.0	51	0.0	NS
Basic health care centers	100.0	807	99.9	1,352	-0.1	NS
Private hospitals	71.0	70	71.8	116	0.8	NS
Ecoregion						
Mountain	100.0	118	99.6	204	-0.4	NS
Hill	98.5	482	98.4	654	-0.1	NS
Terai	95.9	340	96.7	707	0.8	NS
Province						
Koshi	96.4	164	97.6	262	1.2	NS
Madhesh	98.1	171	96.8	246	-1.3	NS
Bagmati	95.6	185	96.2	321	0.6	NS
Gandaki	100.0	119	99.2	198	-0.8	*
Lumbini	97.8	138	97.7	239	-0.1	NS
Karnali	100.0	74	99.7	128	-0.3	NS
Sudurpaschim	99.3	89	99.7	169	0.4	NS

Note: HF = health facility, PHCC = primary health care center, * p < .05, NS = non-significant.

“Offer FP service” indicates those facilities that provide, prescribe, or counsel clients on any of the following temporary modern methods of FP: combined oral contraceptive pills, progestin-only injectables (Depo), implants, intrauterine contraceptive devices (IUCDs), or male condoms, and male and female sterilization.

¹ All types of facility are public health facilities except where private is mentioned.

Appendix Table 2 Change in methods of family planning service availability in health facilities that offer services and the frequency of service availability per week, NHFS 2015 and 2021

FP service offered	2015 NHFS (Facility n=919) (%)	2021 NHFS (Facility n=1,529) (%)	Change between 2015–2021 (% points)	p value
Mean index of FP method offered*	33.9	36.8	2.9	NS
Combined oral contraceptive pills	99.0	98.9	-0.1	NS
Progestin-only OCP	12.5	13.3	0.8	NS
Injectable	98.2	98.3	0.1	NS
Male condoms	99.5	99.9	0.4	NS
Intrauterine contraceptive devices	49.9	61.4	11.5	***
Implants	48.6	70.0	21.4	***
Male sterilization	36.3	42.3	6.0	NS
Female sterilization	35.6	43.3	7.7	**
Emergency contraceptive pills	30.7	12.2	-18.5	***
Counselling on abstinence service	63.6	67.3	3.7	NS
Three temporary modern methods	97.2	97.2	0.0	NS
Five temporary modern methods	43.7	57.7	14.0	***
Seven modern methods	27.9	36.9	9.0	**

**Service availability 5 or more days per week
(Among facilities that provide at least one modern
method of family planning service)**

Background characteristics	2015 NHFS (Facility) (%) n=919		2021 NHFS (Facility) (%) n=1,529		Change between 2015–2021 (% points)	p value
Overall FP service availability 5-days a week	97.3	919	98.5	1,529	1.2	NS
Types of facilities						
Public facilities	97.3	870	98.5	1,446	1.2	NS
Public hospitals	78.0	21	86.9	43	8.9	NS
PHCCs	96.1	43	98.4	51	2.3	NS
Basic health care centers	97.9	807	98.9	1,351	1.0	NS
Private hospitals	96.8	50	98.4	84	1.6	NS
Ecoregion						
Mountain	98.4	118	99.6	203	1.2	NS
Hill	97.3	475	98.4	643	1.1	NS
Terai	96.9	327	98.3	684	1.4	NS
Province						
Koshi	96.4	158	96.2	256	-0.2	NS
Madhesh	97.2	167	97.8	238	0.6	NS
Bagmati	96.4	177	98.8	309	2.4	NS
Gandaki	99.7	119	99.7	196	0.0	NS
Lumbini	98.5	135	99.0	234	0.5	NS
Karnali	99.4	74	100.0	128	0.6	NS
Sudurpaschim	94.0	89	99.2	168	5.2	NS

Note: OCP = oral contraceptive pill, PHCC = primary health care center, *** p < .001, ** p < .01, NS = non-significant.

Modern methods of FP = Facility provides, prescribes, or counsels clients on any of the following temporary modern methods of FP: combined oral contraceptive pills, progestin-only injectables (Depo), implants, intrauterine contraceptive devices (IUCDs), or male condoms.

Three temporary modern method = oral contraceptive pills, injectable (Depo), and male condoms

Five temporary modern methods = oral contraceptive pills, injectable (Depo), male condom, implant, and IUCD

Seven modern methods = oral contraceptive pills, injectable (Depo), male condom, implant, IUCD, male and female sterilization

* These figures are in mean percentage points scale.

Appendix Table 3 Change in possession of tools for infection prevention and control available at health facilities at the time of survey, NHFS 2015 and 2021

Indicators	2015 NHFS (Facility n=919) (%)	2021 NHFS (Facility n=1,529) (%)	Change between 2015–2021 (% points)	p value
Mean index of infection prevention and control	41.9	63.4	21.5	***
Hand hygiene				
Mean index of hand hygiene	54.4	96.2	41.8	***
Have running water	48.5	63.6	15.1	***
Have soap	55.5	66.5	11.0	***
Have alcohol-based hand rub	25.9	92.7	66.8	***
Environmental infection prevention and control				
Mean index of environmental infection prevention and control	93.6	92.6	-1.0	*
Have disinfectant antiseptics (for floor)	68.1	63.1	-5.0	NS
Have waste receptacle	6.3	22.6	16.3	***
Have other waste receptacle	88.0	88.9	0.9	NS
Personal protective equipment				
Mean index of personal protective equipment	1.2	23.9	22.7	***
Have disposable latex glove	86.0	94.0	8.0	***
Have medical mask	17.6	78.3	60.7	***
Have gowns aprons	9.8	50.8	41.0	***
Have eye protection goggles	2.0	30.1	28.1	***
Injection safety				
Mean index of injection safety	2.8	18.0	15.2	***
Have auto-disable or single use standard disposable syringes with needles	92.2	90.6	-1.6	NS
Have needle destroyer	2.9	19.3	16.4	***

Note: *** p < .001, * p < .05, NS = non-significant.

Appendix Table 4 Change in the availability of basic equipment and instruments required for family planning service delivery (observed in health facilities that offer family planning services), NHFS 2015 and 2021

Indicators of service delivery	2015 NHFS (Facility n=919) (%)	2021 NHFS (Facility n=1,529) (%)	Change between 2015–2021 (% points)	p value
Mean index of service delivery	53.5	60.8	7.3	***
Observed functioning digital BP apparatus	1.5	7.1	5.6	***
Observed functioning manual BP apparatus	86.4	97.2	10.8	***
Observed functioning stethoscope	90.0	97.6	7.6	***
Observed functioning examination light	44.8	90.9	46.1	***
Observed examination bedtable	82.6	90.2	7.6	***
Observed FP other visual aids	60.3	61.6	1.3	NS
Observed model showing condom use	10.0	7.6	-2.4	NS
Observed goose lamp	5.8	10.0	4.2	***
FP counseling kit	29.4	29.1	-0.3	NS
Face sheet maintained at service site	68.9	71.8	2.9	NS
Health service card	73.8	74.7	0.9	NS
FP service register	89.0	92.0	3.0	NS

Note: FP = family planning, BP = blood pressure, *** p < .001, NS = non-significant.

Appendix Table 5 Change in staff/guidelines, equipment, and commodities used as trace indicators to construct the family planning service delivery readiness index (observed at health facilities on the day of the health facility visit), NHFS 2015 and 2021

Indicators of service readiness	2015 NHFS (Facility n=919) (%)	2021 NHFS (Facility n=1,529) (%)	Change between 2015–2021 (% points)	<i>p</i> value
Mean index of service readiness	4.3	6.1	1.8	NS
Staff and guidelines component				
Guideline on FP	12.8	20.4	7.6	**
Staff trained in FP	31.3	20.9	-10.4	***
Equipment component				
BP digital or manual apparatus with stethoscope	86.6	96.4	9.8	***
Commodities component				
Have all four FP commodities	2.9	2.9	0.0	NS
Combined pill	97.9	94.6	-3.3	**
Progestin-only pills	3.0	3.5	0.5	NS
Injectable	96.8	95.0	-1.8	NS
Male condoms	98.3	96.9	-1.4	*

Note: FP = family planning, BP = blood pressure, *** $p < .001$, ** $p < .01$, * $p < 0.05$, NS = non-significant.

Appendix Table 6 Change in the providers' compliance with standards of quality service delivery by client exit interview questions, NHFS 2015 and 2021

Indicators of providers' compliance with providing quality family planning (FP) service	2015 NHFS (FP client n=768) (%)	2021 NHFS (FP client n=848) (%)	Change between 2015–2021 (% points)	p value
Mean index of providers' adherence to provision of quality service	26.8	36.4	9.5	***
Client's history				
Mean index of client history	17.0	27.8	10.8	***
Asked last delivery date or age of youngest child	16.0	34.5	18.5	***
Talked current pregnancy status	28.7	45.3	16.6	***
Regularity of menstrual cycle	37.0	50.3	13.3	**
Asked age of client	37.8	56.9	19.1	***
Ask number of living children	25.8	43.3	17.5	***
Ask desire for a child or more children	9.0	20.6	11.6	***
Asked desired timing for birth of next child	2.7	7.3	4.6	**
Asked about smoking	1.1	2.0	0.9	NS
Asked about symptoms of STIs	3.6	5.6	2.0	NS
Asked about any chronic illnesses	7.8	11.8	4.0	NS
Physical examination				
Mean index physical examination	45.2	47.2	2.0	NS
Measured blood pressure	52.4	55.9	3.5	NS
Measured weight	38.0	38.4	0.4	NS
Discussion of partners and STIs				
Mean index discussion of partners and STIs	1.6	1.3	-0.3	NS
Discuss partner's attitude toward FP	3.5	2.3	-1.2	NS
Discuss use of condom to prevent STI	0.1	1.1	1.0	NS
Discuss use of condom to as dual method	1.2	0.4	-0.8	NS
Questions and concerns				
Mean index questions and concerns	21.4	38.2	16.8	***
Asked if he/she had questions/concerns on FP method	19.6	38.5	18.9	***
Discuss concerns about side effect of FP method	23.2	38.0	14.8	***
Privacy and confidentiality				
Mean index privacy and confidentiality	31.7	52.4	20.7	***
Ensured client about visual privacy	47.8	75.3	27.5	***
Ensured client about audio privacy	39.9	68.3	28.4	***
Assured client on confidentiality	7.3	13.5	6.2	*
Additional provider's actions				
Mean index additional provider's actions	54.3	58.6	4.3	*
individual client card reviewed before consultation	66.3	66.7	0.4	NS
Wrote on the client's health card	83.6	84.9	1.3	NS
Used any visual aids for health education or counseling	5.8	6.7	0.9	NS
Discussed follow up/return visits	61.6	76.4	14.8	***

Note: STI = sexually transmitted infection, *** p < .001, ** p < .01, * p<0.5, NS = non-significant.

Appendix Table 7 **Change in the providers' compliance with standards of quality service delivery by background characteristics of health facility, NHFS 2015 and 2021**

Background characteristics	2015 NHFS (FP client n=768)		2021 NHFS (FP client n=848)		Change between 2015–2021 (% points)	p value
	%	(95% confidence interval)	%	(95% confidence interval)		
Types of facilities						
Public facilities	26.8	[24.7, 28.8]	36.3	[34.3, 38.3]	9.5	***
Public hospitals	30.5	[27.6, 33.5]	44.1	[41.8, 46.4]	13.6	***
PHCCs	31.8	[29.5, 34.1]	40.0	[37.2, 42.8]	8.2	***
Basic health care centers	25.4	[22.8, 28.0]	34.5	[32.0, 37.0]	9.1	***
Private hospitals	30.2	[24.8, 35.6]	54.9	[45.9, 64.0]	24.7	***
Ecological regions						
Mountain	31.2	[27.4, 35.0]	34.5	[30.2, 38.8]	3.3	NS
Hill	27.5	[24.7, 30.3]	37.9	[33.9, 42.0]	10.4	***
Terai	25.0	[21.6, 28.4]	35.9	[33.4, 38.3]	10.9	***
Province						
Koshi	28.6	[24.2, 33.0]	37.1	[33.5, 40.8]	8.5	**
Madhesh	19.4	[16.7, 22.1]	30.3	[25.6, 35.0]	10.9	***
Bagmati	28.8	[24.4, 33.1]	35.0	[29.9, 40.2]	6.2	NS
Gandaki	25.2	[19.2, 31.1]	41.7	[32.2, 51.1]	16.5	**
Lumbini	26.4	[22.2, 30.6]	40.0	[35.8, 44.2]	13.6	**
Karnali	33.0	[18.7, 47.2]	37.5	[32.7, 42.3]	4.5	NS*
Sudurpaschim	29.2	[24.4, 33.9]	37.8	[33.4, 42.1]	8.6	**

Note: HF = health facility, FP = family planning, PHCC = primary health care center, *** p < .001, ** p < .01, NS = non-significant.

APPENDIX TABLES A: COMPOSITE INDEX CONSTRUCTS

A1 Structure

Appendix Table A1.1 Indicators used to create index of family planning method offered (availability of family planning service)

Indicators/items (Appendix 2)	Code
Mean index of FP method offered	
Combined oral contraceptive pills (OCP)	Yes=1; No=0
Progestin-only OCP	Yes=1; No=0
Injectable	Yes=1; No=0
Male condoms	Yes=1; No=0
Intrauterine contraceptive devices	Yes=1; No=0
Implants	Yes=1; No=0

Appendix Table A1.2 Indicators used to create index/sub-index of infection prevention and control

Indicators/items (Appendix 3)	Code
Mean index of infection prevention and control	
Mean index of hand hygiene	
Running have water	Yes=1; No=0
Have soap	Yes=1; No=0
Have alcohol-based hand rub	Yes=1; No=0
Mean index of environmental infection prevention and control	
Have disinfectant antiseptics (for floor)	Yes=1; No=0
Have waste receptacle	Yes=1; No=0
Have other waste receptacle	Yes=1; No=0
Mean index of personal protective equipment	
Have disposable latex glove	Yes=1; No=0
Have medical mask	Yes=1; No=0
Have gowns aprons	Yes=1; No=0
Have eye protection goggles	Yes=1; No=0
Mean index of injection safety	
Have auto-disable or single use standard disposable syringes with needles	Yes=1; No=0
Have needle destroyer	Yes=1; No=0

Appendix Table A1.3 Indicators used to create index of service readiness

Indicators/items (Table 6)	Codes
Staff and guidelines component	
Guideline on FP	Yes=1; No=0
Staff trained in FP	Yes=1; No=0
Equipment component	
Have BP digital or manual apparatus with stethoscope	Yes=1; No=0
Commodities component	
Have combined pill	Yes=1; No=0
Have progestin-only pills	Yes=1; No=0
Have injectable	Yes=1; No=0
Have male condoms	Yes=1; No=0

FP = family planning, BP = blood pressure

Appendix Table A1.4 Indicators used to create mean index of service delivery

Indicators/items (Table 4)	Code
Mean index of service delivery	
Observed functioning digital BP apparatus	Yes=1; No=0
Observed functioning manual BP apparatus	Yes=1; No=0
Observed functioning stethoscope	Yes=1; No=0
Observed functioning examination light	Yes=1; No=0
Observed examination bedtable	Yes=1; No=0
Observed FP other visual aids	Yes=1; No=0
Observed model showing condom use	Yes=1; No=0
Observed goose lamp	Yes=1; No=0
FP counseling kit	Yes=1; No=0
Face sheet maintained at service site	Yes=1; No=0
Health service card	Yes=1; No=0
FP service register	Yes=1; No=0

BP = blood pressure, FP = family planning.

A2 Process

Appendix Table A2.1 Indicators used to create index/sub-index of providers' adherence to providing quality service

Indicators/items (Table 7)	Code
Mean index of providers' adherence to provision of quality service	
Mean index of client history (client assessment)	
Asked last delivery date or age of youngest child	Yes=1; No=0
Talked current pregnancy status	Yes=1; No=0
Regularity of menstrual cycle	Yes=1; No=0
Asked age of client	Yes=1; No=0
Asked number of living children	Yes=1; No=0
Asked desire for a child or more children	Yes=1; No=0
Asked desired timing for birth of next child	Yes=1; No=0
Asked about smoking	Yes=1; No=0
Asked about symptoms of STIs	Yes=1; No=0
Asked about any chronic illnesses	Yes=1; No=0
Mean index physical examination	
Measured blood pressure	Yes=1; No=0
Measured weight	Yes=1; No=0
Mean index discussion of partners and STIs	
Discussed partner's attitude toward FP	Yes=1; No=0
Discussed use of condom to prevent STI	Yes=1; No=0
Discussed use of condom to as dual method	Yes=1; No=0
Mean index questions and concerns	
Asked if he/she had questions/concerns on FP method	Yes=1; No=0
Discussed concerns about side effect of FP method	Yes=1; No=0
Mean index privacy and confidentiality	
Ensured client about visual privacy	Yes=1; No=0
Ensured client about audio privacy	Yes=1; No=0
Assured client on confidentiality	Yes=1; No=0
Mean index additional provider's actions	
Individual client card reviewed before consultation	Yes=1; No=0
Wrote on the client's health card	Yes=1; No=0
Used any visual aids for health education or counseling	Yes=1; No=0
Discussed follow up/return visits	Yes=1; No=0

STI = sexually transmitted infection, FP = family planning.

A3 Outcome

Appendix Table A3.1 Indicators used to create the index of common problems

Indicators/items (Table 7)	Code
Mean index of common problems	Yes=1; No=0
Waiting time to see provider	Yes=1; No=0
Ability to discuss problem	Yes=1; No=0
Amount of explanation received about the problem or treatment	Yes=1; No=0
Privacy from having others see the examination	Yes=1; No=0
Privacy from having others hear your consultation/discussion	Yes=1; No=0
Availability of medicines	Yes=1; No=0
The hours of service at facility	Yes=1; No=0
The number of days services are available	Yes=1; No=0
Cleanliness of facility	Yes=1; No=0
Treatment by the staff	Yes=1; No=0
Cost of facility	Yes=1; No=0